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# *Habitat 2000*

*The 1974 B. Y. Morrison  
Memorial Lecture*

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**T**he B. Y. Morrison Memorial Lectureship was established by the Agricultural Research Service of the U.S. Department of Agriculture to recognize outstanding accomplishments in the science and practice of ornamental horticulture and other environic sciences . . . to encourage their wider application to improve the quality of life . . . and to stress the urgency of preserving and enhancing natural beauty in man's surroundings.

Lecturers meeting these standards of achievement and capable of giving effective voice to vital environmental messages are chosen from nominations submitted to a formal selection panel established by the Department. Nominations are obtained from scientific societies and other professional associations, foundations, universities, and previous lecturers. Each platform is selected to provide a distinguished audience, and to promote an exchange of ideas among leaders working to improve our environment. The texts of these lectures frequently are reprinted in popular and professional publications.

B.Y. Morrison (1891–1966) was a many-faceted man—a scientist, landscape architect, administrator, plant explorer, author, and lecturer. A pioneer in ornamental horticulture, he was the first Director of the National Arboretum, today one of the world's great botanic research and education centers. He gave the American public dozens of new ornamental plants, including the well-known Glenn Dale azaleas. He did much to advance the science of botany in the United States.

Morrison's plant exploration trips to the Orient, Europe, and Latin America made him a nationally known authority on foreign plants. He was one of the first Department officials to encourage introduction of ornamentals. His popular publications were among the first to promote plants to enhance the beauty of the land.

# *The 1974 B. Y. Morrison Memorial Lecture*

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*Presented in Cooperation With  
the American Society of Planning Officials  
at their 40th Annual National Planning Conference in  
Chicago, Illinois  
May 12, 1974*



# *Habitat 2000*

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*by Barbara Ward  
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## *Poverty and Human Settlements*

These are difficult times to discuss anything. It is especially difficult to address the theme of your conference, "The Politics of Scarcity," when we are also confronted by a scarcity of politics. This scarcity is, in large measure, a reflection of the scarcity of good policies and good ideas.

It is reassuring, when giving an address, to feel that it is possible to hand down the ten commandments of wisdom graven on the tablets of the law and that it is possible to arouse instant recognition and enthusiasm. But these are not days for comfortable wisdom.

Take Britain, for instance. We are waiting these days for the other shoe to drop, the other shoe being the extra billions of dollars that have to be paid for essential oil imports—a debt we have not yet worked out any way of paying. So, for lack of a better idea, we British have removed all the speed limits we put on our roads to conserve gasoline. Now motorists can use up as much as they like.

The same inconsequence reigns in Europe. Something like an extra \$30 billion has to be found before the

end of the year. No one has much clue as to where to find the needed pot of gold. So the speed limits are off there, too, to make sure that no large petrol-guzzling automobile has to endure the frustration of being driven at under 100 kilometers an hour. If all this has the feel of "Alice in Wonderland," it is not far from the facts. Certainly we have to pay much more just to drive at the same pace.

In short, in times like these, if we are "hot for certainties," then we are likely to receive quite a few dusty answers. But I am not sure that the fading of old attitudes may not be the precondition for new concepts and new hopes. We are reliably informed that chaos is profoundly creative, for it is over this void that the spirit broods to produce new worlds and new visions. Well, we have chaos enough to prove irresistible. And for planners in particular, whose task is to mould the future, the very openness of our dilemmas and scale of our uncertainties could be the beginning of new work. Certainly, it is in this confidence that we should approach the problems of the human habitat. Nowhere do the old ways seem more inadequate or the future more uncertain.

But this is the reason for a new attempt at radical reconsideration, and the U.N. Conference/Exposition on Human Settlements to be held in Vancouver in 1976 could be the event that helps to concentrate our minds. Its official title is now "Habitat," perhaps a clearer and more usable word than "settlement," but one, above all, that reminds us that man as a species depends for his survival on the quality of his "niche" and, like every other living species, can be destroyed if his habitat is too profoundly disturbed.

The Vancouver Conference does not stand on its own. It is an integral part of a process which at the recent special U. N. session on raw materials, Secretary of State, Dr. Henry Kissinger, described as an "unprecedented agenda of global consultations 'representing' a collective decision



to elevate our concern for man's elementary well-being to the highest level." This year, population and food will be considered by the United Nations. Next year the whole strategy of development will be taken up again by the General Assembly.

There is talk, too, of a U.N. energy conference and preparations are well along for a reconsideration of world trade and liquidity. It is in this wider context of profound and puzzled re-examination of world issues that the Vancouver Conference takes its place. And perhaps the first thing to be said is that it is part of what may well prove to be a useful and encouraging process. The sudden appearance of this "agenda" is a sign that peoples—and governments—are becoming aware of the fact that we have a great deal of fresh thinking to do.

Moreover, if this thinking is not global in scope, it is unlikely to lead us anywhere. Even if we are reacting rather slowly to the implications of the Arab decision to multiply the price of oil six times in one week, it has already shown us that our most intimate concerns, our daily journeys, our goods, our services, in short anything to do with our use of energy—which is practically everything—is tied up with decisions taken by countries half a world away. Abu Dhabi and Qatar are hardly household words. But they now vitally affect all our household routines. And if this is not interdependence then words have no meaning.

Such is the context of the Habitat Conference at Vancouver in 1976; it represents a significant step in a wider process of planetary consultation. It may be that it could prove the most vital of all the consultations. We can discuss food separately, and population separately, and energy, and strategy. But where do they all come together—reacting on each other, enhancing hope or undermining it fatally? In one place only—the human habitat. The difficulty of the conference is that it can literally cover everything,

reflect everything, and forecast everything—which is perfectly unmanageable.

Therefore, the first task is to pick out the priorities—both those of already accepted wisdom, and of new insights forced on us by dimly perceived constraints and possible alternative courses for the human future. And what I would like to examine with you is the question whether our new sense of potential scarcity and our old perceptions of priorities contradict or reinforce each other. I would like to suggest that just possibly our consultations will show us that solutions to our new problems may turn out to provide the most workable answers for the old.

I suspect that for all of us, the ending of poverty in settlements is the first priority, both in developed and developing societies. Poverty may exist only in pockets within the framework of the industrialized world's affluence. But the fact that it has existed side by side with growing wealth is a scandal and a disgrace. But this evil is as nothing compared with the scale of poverty in the developing world. Induced by rapid population growth and by the fundamental upsetting of traditional society through rapid modernization, it presents a challenge on a scale that mankind has never seen before.

By the year 2000 the urban population of the developing world will have doubled to over 3 billion. At the same time, rural population will also have doubled to over 2 billion. And the interchange between the rural and the urban sector will be going forward in a series of catastrophic, Niagara-like torrents of people moving out of a relatively stagnant agriculture—or agriculture which is mechanizing at high speeds—into cities which are totally unprepared for this swamping scale of movement.

The poverty induced by such a “wandering of the peoples” is not simply deprivation as we know it in the developed world. It is, as Mr. Robert McNamara defined it in his speech at

Nairobi last year, “abject poverty . . . a condition of life so degrading as to insult human dignity.” There can surely be no question about our global priorities. By the year 2000 these conditions should no longer prevail.

The reasons for this central world fact of deprived and ignoble settlements are in part a direct reflection of political philosophies which do not put the habitation of the citizen very high on the priority list. Few countries, for instance, have run out of defence budgets, and this is simply because, for traditional national feeling, “defence” is absolute. But the difficulty is not only a straightforward matter of political default. In both developed and developing societies, the deprived settlements are part of a wider pattern or system of urbanization which radically affects their unsatisfactory form and radically complicates the task of putting them right.

First, let’s discuss developed societies. A majority of the worst areas of extreme poverty are either in old, rundown city centers or in regions, agricultural or industrial, from which vigorous economic life has drained away. The clichés of urban planning have clustered heavily around these two facts—undesirable urban concentrations, for instance, in France where nine-tenths of economic activity has threatened to become concentrated in the Parisian region—and the tendency of these concentrations to spread into each other. For example, Boston meeting Washington in “Boswash,” San Francisco meeting San Diego in “San-San,” or an interesting new example, Manchester doing a bend through Birmingham and London, darting across the Channel, and ending up in Essen—“Esschester” or “Messen,” no doubt.

These agglomerations have undoubtedly accentuated the problems of poverty. They were in part shaped by the escape of the more affluent from the grime and toil of industrialized cities—suburbia had its beginning in the 1820’s. Suburbs have been spun out and turned into vast cobwebs of movement by



the private car. Jobs and services have followed them, leaving the old, the sick, and the unskilled marooned and jobless in the deserted quarters. And what happens to a single neighborhood within an "urban region" can happen to whole communities as new industries move to other areas where concentrations of people offer better supplies and markets.

All this is well known to planners and has been at the center of their preoccupations for decades. Add the more recent insights of damaged environment—too much commuting, too much congestion, too much pollution—and we can see the pockets of misery in developed society, as it were, caught in a much wider settlements system which, if not lethal for the affluent, at least gives everyone cause for complaint.

But this system—of over-concentration combined with sprawl—which in the richer countries produces no more perhaps than discomfort for the comfortable majority and acute injustice only for a minority, threatens to produce actual social collapse when it is transferred to the developing world. There, the transition from the rural to the urban sector is in no way cushioned by the relative degree of resources which, for instance, mitigates the plight of southern black citizens moving to northern cities in the United States or of migrant laborers in Europe. Here, urban concentration is all too often achieved at the cost of removing all economic vitality from outside regions—save the unquenchable vitality of the birth rate.

At the same time, the hemorrhage of people creates "spread cities" of inconceivable size—a Mexico City or a Buenos Aires hastening to the 10 million mark, a Calcutta on the way to 30 million. Within these spread cities lack of transport to reach jobs, lack of jobs even if they could be reached, lie at the root of inhuman deprivation.

# *The World Energy Jag*

If the structure of our settlements aggravates poverty, it is perhaps sensible to ask how they come to have the structure in the first place. We would have to admit that at least in developed market economies, the structure was not planned. We have a strictly “unintended city,” its shape and structure largely determined by the price signals of the economic system. And increasingly in the last 3 or 4 years, people have begun to ask whether the price signals may not have been highly inaccurate. Over the last 25 years, it can be argued, the developed world’s settlements have been growing, changing, altering their structure, developing their industrialization and their service sectors and moving on to what people loosely call “the post-industrial society” on the basis of two very faulty pieces of economic calculus.

One miscalculation I will refer to only briefly. It was part of the great debate at the U.N. Environment Conference at Stockholm and is probably well known to all of us. The calculations of gross national product made since the post-war Keynesian revolution of sustained demand have erred by leaving out all costs save those that can be registered in transactions.

If a manufacturer pollutes the river, so that—like the Cuyahoga at Cleveland—it catches fire, no price is fixed for the damage since the water was free in the first place. If upstream factories kill downstream fish, again the loss goes unregistered. It is an “external diseconomy” which exercises no pressure on economic decision-makers since it never entered into their decisions in the first place. Put all the uncounted disadvantages together and gross national “bads” and “disservices” might cancel a sizable proportion of the goods and services that make up GNP.

This absence of environmental calculus is particularly important for urban structure since internal combustion—in cars and power plants—accounts for nearly all pollution and the fact that it is *not* estimated in the price system gives settlements practicing massive energy use a profound bias towards an irrational use of resources.

We are now learning that this has not been the only bias. Much that is skewed and unsatisfactory in modern settlements comes, I suggest, from yet another aspect of energy use. At 15 cents a barrel at the wellhead [source], the developed world has had at its disposal in the last quarter century billions of years' worth of stored reserves of the world's cheapest form of energy. The result has been what I can only call an astounding "energy jag."

Since 1950, the world's use of energy has gone up by not less than 6 percent a year. In Japan, it has gone up by an annual 11 percent. In the United States, the growth is between 4 and 5 percent, but Americans were in the energy race rather sooner than the rest of the world. In fact, last year, 33 percent of all the energy consumption in the world took place in the United States which has only 6 percent of the world's population. America also uses three times more energy per capita than does Europe. But, never fear, Europe is catching up. The *annual* increase in car registrations is approximately 20 percent. In fact, given Europe's smaller land area, saturation may even be nearer.

These colossal leaps in the use of energy have been due, above all, to its phenomenal cheapness. The price paid the Arabs for their petroleum actually fell between 1950 and 1970—from about two-and-a-half dollars a barrel to one-and-a-half dollars. During that period, the price of manufactured exports increased steadily. So did a number of raw materials. But the prime component in every form of industry, agriculture; construction and transport slightly fell. The result was the energy jag that emerges in an infinite variety of ways.



Last summer, for instance, before the Arab-Israeli War, a new construction firm offered British office builders a new self-contained, internally-controlled, super-efficient environmental system to ensure that its clients would not have to suffer extremes of climate. These people would be heated and cooled to the same temperate point all the year around. But where was the first example to be? Chester. Now, if there is any place in the British Isles where the climate is naturally temperate throughout the year, it is Chester. No ice floes come up the river, summer heat is rarely above 70° F. An ideal temperate climate can in the main be secured by the simple expedient of opening a window. But no—the fossil fuel of the billenia must be burnt to give the office-goers of Chester what they already possess at no cost. With such follies, a steady annual increase of 6 to 8 percent in energy use is explicable—if insane.

Let me give you another example—this time from agriculture. The rockbottom cheapness of energy has meant a massive increase in all energy inputs into animal husbandry. If we do our energy calculus carefully, we can quickly discover that we are not eating steak—we are eating petroleum. In the final package in the supermarket, five units—or let us call them kilo-calories—of energy go to produce one kilo-calorie of meat.

By the time fertilizer and pesticides are included, by the time the mechanized equipment has been deployed in the field, and the harvest first stored, then transported to market, and then put in the deep freeze for the supermarket, every unit of meat is outweighed by petroleum in a ratio of five to one.

But this does not end the paradox of “eating” petroleum lightly disguised as beef. Having eaten our energy-using and energy-inducing steak, we sit firmly behind the desk or behind the wheel, never using the energy up again. I am told that the American Medical Association suggests that possibly a one-third reduction in American meat consumption might

be a good idea in order to stave off heart attacks and strokes. There is surely some disproportion in energy calculations by which we give ourselves the diet required for the highest uses of human energy, and then sit—and then sit—and then sit.

But nowhere has super-cheap energy played so decisive a part as in the two great urban perplexities of modern times—the over-concentrated city, and the outward sprawl of the urban region. Again and again declining regions are found to have depended upon traditional forms of power and transport—coal, railways, steamships. The new bright cities are based on petro-chemicals, on cheap electricity, on energy-intensive technologies, the car and the truck. And within the urban regions, gasoline at 15 cents at the wellhead (however much thereafter processed and taxed) has been the force driving Americans to more than halve their use of public transport between 1930 and 1970 and end up with 80 to 90 percent of their journeys to work in metropolitan areas being done in private cars.

The web of the region is a road web and a car web. Homes and jobs and recreation are so scattered that the mesh of traffic is almost as dense between the suburbs as from suburb to center. Europe's cities are in much the same state.

In the far deeper difficulties of over-concentration and over-sprawl in developing lands, bone-cheap energy has also played a part. High-energy technologies are capital-intensive; too much of the industry introduced into the developing world over the last two-and-a-half decades has simply been picked up from its context of full capital development and high-wage unionism and put down among the capital-poor and labor-rich communities of the Third World. This trend not only increases the “glamor” of the urban centers but also deepens the risk of high unemployment and contributes directly to failing vitality in the countryside and increased deprivation in the cities.

Again, the “Green Revolution”—used as a shorthand

for the adoption of intensive mechanization, fertilizers, and pesticides—can offset the gains it brings in larger harvests by turning abundant labor off the land and increasing its dependence on what is scarce: capital and energy. And in the cities swollen by the added migrants out of agriculture, the cars of the affluent tend to dictate the city's infrastructure of roads and the industry's priority for automobile assembly before even 5 percent of the people can own cars. The lack of mass transit maroons people in the squatter settlements. Meanwhile, increased motor traffic for the rich brings pollution to everybody.

If, on the contrary, all our assessments of energy costs—and related pollution costs—now have to be radically reconsidered, it may be that energy used less lavishly and with a more just appreciation of its “goods” and “bads,” will be one of the answers we seek to the creation of better settlements, a reinforcement of old hopes, a harbinger of new ideas.

## *Calculating Rising Energy Costs*

Some experts, of course, do not agree that the day of bone-cheap energy is over. I admit that a judgment is involved here. Those who argue that all kinds of new breakthroughs will occur to take the place of cheap petroleum can claim that so far, in the technological age, one invention has succeeded another with reassuring regularity. So it is an estimate—a guess, if you like—to say that, in the future, energy is going to be more expensive and could give us new reasons for rethinking our urban problems and devising new and more satisfactory power for our communities.

But it is not an uninformed guess. The reasons for expecting higher costs cannot easily be dismissed, least of all



in the half century ahead of us during which we have to adapt our structures to the steady exhaustion of the world's petroleum supplies.

The first reason is simply that virtually all the alternatives visible at present are more costly in the most fundamental sense. These alternatives use up more energy in producing energy than was ever the case with oil welling up in the desert. Whether it is a question of new coal mines, or the gassification of coal, or processing the oil shales that lie in the mountains of the West, or exploiting Athabasca tar sands, or indeed entering "the Faustian bargain" of nuclear energy—there is not one of these technologies that does not involve much higher capital costs than the simple business of getting oil from Arabia.

And capital itself—which is often nine-tenths energy—is affected at every application by the higher costs of energy. This is all part of the new calculus we have to make—not treating energy almost as a "given," like air and water, but as a costly resource.

Nor is the calculus simply one of increased economic costs. There are environmental costs connected with all these new technologies which we cannot afford to ignore. As we have already noticed, one element in the cheapness of energy in the past has been the degree to which its environmental costs were not internalized. These costs have been borne by the air, the lungs, the digestive tract, by the water, by the oceans. One of the great themes at Stockholm was that there are limits to what the sum of organic systems that make up our planet can cleanse and carry. And perhaps of all these the most ominous and uncertain limit is that set by the absorptive capacity of the watery three-quarters of our globe.

The oceans are our ultimate sump, our cistern with no outlet pipe. The more our cars spill their pollutions via the air into the seas, the more our giant tankers leave a

snail's trail of filth across the "moving waters," the more DDT ends up there, the more seabed mining and offshore drilling dump wastes into the deep, the more inexorably, yet obscurely, the possible limit of all further absorption approaches our globe and with it the risk of eutrophication on a planetary scale, the risk of the death of the oceans—the cradle of all life and therefore life's potential grave.

There are more localized risks, too. If, in stripmining, slopes at an angle of more than  $20^{\circ}$  are exploited, there can be no future rehabilitation of the land. If areas are developed where moisture is as insufficient as on the western plains, again rehabilitation is not possible. Oil shale technology combines this risk with another. It demands vast supplies of water. At the same time, its wastes, discharged into the rivers and aquifers can seep dangerously into underground water systems. A deranged landscape and a poisoned land could be the price of ransacking the possibilities for alternative supplies of energy without paying the full environmental costs.

And nowhere could the search for unlimited cheap power lead us into graver risks than in a frantic, careless, irresponsible pursuit of the nuclear option. Let me concentrate on the fast breeder reactor. The strongest case for the reactor is precisely that since it releases more energy than it consumes, it is the answer to the hope of continuing to be able to rely on cheap energy. But the reactor also produces, in plutonium, one of the most destructive substances known to man, quickly and lethally cancer-producing and, in addition, possessing a half-life of 25,000 years. Alvin Weinberg, head of the nuclear installations at Oak Ridge, and one of America's most experienced leaders in the field, has warned us that if we wish to rely on a technology which constantly increases the stocks of an entirely lethal and virtually indestructible carcinogen, we must be assured that our social institutions will remain intact for the next 25 millennia to oversee the process.

No one, I think, looking at the world in 1974—from IRA to Palestinian guerillas to hijackers to the Symbionese Liberation Army—would be likely to feel unreserved confidence in reliably stable institutions, least of all, for 25,000 years ahead. The strain is serious enough if the “masterless men” only deploy SAM missiles near major airports. What of the plutonium bomb when every year the stocks that can be raided constantly increase and cannot be destroyed?

There was a recent report from the Atomic Energy Commission pointing out that probably a man could walk into some nuclear plants now and take plutonium—in fact, some of it may have been taken already. Moreover, the technique of making a crude plutonium explosive is not unknown. I confess that the man in the stocking face scares me sufficiently when he carries nothing more lethal than a sub-machine gun. But the guerrilla with the plutonium bomb seems a very high risk to take simply to ensure the possibility of our continuing the old “energy jag.”

This list of alternatives is not exclusive. It may be that fusion energy is genuinely safe, cheap, and inexhaustible. But the technology is not yet so certain as to permit us unconcerned reliance on its future abundance. From the environmental point of view, “income” energies—from the wind, from the sun—are the least disruptive of all. Solar energy is particularly interesting for small-scale activities. But, again, we have still to find the satisfactory technical answers.

All in all, it would seem to be the course of wisdom not to put all our efforts into increasing our energy supply so that a 6 percent annual growth rate can continue indefinitely. The need is rather to examine our behavior, our institutions, and our structures and see whether our use of energy cannot become more manageable and, indeed, more rational. In this approach, the answer to potential constraints and even scarcity is not a flat-out search for more



supplies but a hard and careful look at less demand, in a word, a new sense of the need for conservation.

## *Energy and Human Settlements*

It is at this point that we may, like Dr. Johnson's philosopher, allow a little cheerfulness to break in. An energy-conserving community might well be inclined to consider more seriously the kinds of reform of settlement structure, spatial planning, and patterns of mobility which have long been advocated on other grounds. Take, first in developed countries, the two familiar problems of urban sprawl and megalopolitan concentration. Higher energy costs could reinforce existing economic and environmental arguments in favor of an increased use of mass transit and a lesser reliance, within cities, on the automobile. An improvement in public transport would automatically increase the opportunities for employment of workers living without cars in the rundown central areas—a recent simulation of future traffic flows in Boston showed that with new modes of public transport, over 200,000 new jobs could be opened up in the suburbs for poor families in the center city. The byproducts of less pollution and congestion would be a gain for all citizens.

But, as we have seen, "sprawl" is not simply made up of linear extensions of the city. The freedom of the automobile owner to wander about in search of new locations, cheaper land, and greater amenities—until others arrive to swamp these advantages—gives the urban region its chaotic character. No rapid transport system as such could serve all the needs of commuters and shoppers and students and sportsmen, all intent on different objectives and weaving webs of traffic round and round the inner city. It has long been apparent that more comfortable and satisfying social living demands some better grouping of jobs and services,

some more concentrated spatial planning of genuine communities, some restoration of the multiclass urban villages which, in older societies, often exist in submerged form beneath the ugly spread of "sub-topia."

Energy constraints could encourage the trend towards communities planned for a varied mix of occupations and income levels in which work, marketing, education, church-going and leisurely activities could be carried out safely and largely on foot—with some mitigation, incidentally, of the better fed citizens' personal energy problems. Some of the New Towns in Britain have been designed to secure a balance between the construction of buildings and the kind and amount of movement they generate—a sanity of approach totally lacking in such irrationalities as the construction of 100-story trade towers with a daily elevator service programmed for 50,000 workers and 80,000 visitors and no computation whatsoever of the impact of their movement on the surrounding city.

Admittedly, in densely built-up urban areas, any process of sorting out communities and services and achieving a better balance of neighborhoods confronts formidable problems of public persuasion and, at times, coercion. Moreover, any policy designed to restore more genuine choice and opportunity to a constricted region will have the task made doubly difficult if it is still the magnet for further migrations and increasing density. For this reason, a number of countries are attempting to lessen megalopolitan concentration by building counter-poles of attraction—as in England's Milton Keynes or the various regional centers proposed in France to lessen the attraction of Paris.

In these new communities, better energy use both in building design—insulation, site, communal heating—and in traffic networks can be planned from the start. So, too, can environmental management and the elimination of waste through complete recycling be planned from

the start as in the policy proposed for France's new industrial center at Vaudreuil. Thus, the need for new forms of energy conservation can become a spur to the invention of new communities, which would take the strain off older areas and provide new models of urban living that have a better chance of being truly "urbane."

And I believe that in the settlements of the developing world, a new emphasis on energy conservation can be even more constructive. For one thing, as we well know, the costs of the energy crisis fall most heavily on the poorest nations in the Third World. India, with a fifth of the world's peoples, had total reserves of just over a billion dollars in 1973. This year, the import bill for petroleum alone will be not much less. Energy conservation is not a luxury. It is iron necessity. But it need not, on that account, be a continuing constraint. Within the vast metropolitan areas of the developing world, a decisive commitment to mass transit and a decisive rejection of the car for urban use would not only halve the energy bill but could open up urban jobs to the squatter communities. It could also, in theory at least, lead to a regrouping of industries and services in such a way as to enhance the opportunities of the urban migrants.

However, no amount of public transit and reorganized employment will be sufficient if congestion continues to increase. If Bombay reaches a density of over 115,000 a square mile—the figure for New York is 25,000—no system can secure mobility and easy access to employment. For this reason, the concept of new centers of urban growth to take the pressure off the old is even more vital in countries where population doubles every thirty years and cities do so in ten years or less.

And it is not only an urban necessity. We are beginning to realize that the configuration of settlements plays a critical part in agriculture as well. If a world scarcity of food

is not to prove even more disruptive than energy constraints, the output of the developing world's farmers will have to double and treble in the next 30 years. Even before the crushing increase in the price of petroleum, doubts were felt about the viability of too great a reliance on farming techniques that can decrease the use of labor. Not least in these doubts was the realization that only larger and more affluent farmers could profit by the new methods. The problem remains, however, of securing the vast increases in productivity needed to meet the world's rising need for food on the small farms of less than 8 hectares [20 acres] that make up the bulk of the agricultural sector and provide the living for a billion souls.

How can the small farmer produce more? How can he be helped? In answering this question, we could find that the settlement patterns developed in the next decades play a critical part in success or failure. Over-concentration in vast metropolises drains vigor, skill and capital from the countryside.

But it is possible that intermediate urban communities served by a grid of small towns and villages could be built to provide centers for marketing, storage, banking, processing, labor-intensive industry answering farm needs, and education and health services modern enough to meet rising aspirations. A "grid" of this kind has been attempted in centrally planned economies such as Rumania. China has purposefully pushed development down to the regional centers and built up self-contained communes with a variety of services. And incidentally, this decentralization is energy conserving in the fullest sense since most of the local works are profoundly labor-intensive and the vast country as a whole is a nation on bicycles. (They speak of a million bicycles in Peking alone.)

Another possible aspect of sane energy use, particularly in the steady sunshine of the Tropics, would be the evolution



of solar energy technology to serve small communities and labor-intensive work.

The developing world, for all its poverty and lack of resources, has one great asset. At least half of its building has yet to be done. Its mistakes are not set in steel and concrete. Its centers are not paved over. Asphalt has not covered the land. A different pattern of settlements, more decentralized, more energy conserving, more neighborly, and more human, can still be built. Every constraint could give the impetus to fresh design and do so in time.

## *Rational Vision of the Good Life*

However, I do not want to suggest that a change in settlement structures, or modifications of the context of urbanization, or a rethinking of the community's spatial arrangements are all that we require. Such reorganizations can lessen the impact of poverty and inhuman want. But these must be attacked directly if a modest human standard for all citizens is to be achieved in our human habitat by the end of this century.

And here is the rub. Even at the height of our "energy jag," when western wealth was growing at unprecedented rates, underpinned by our 15-cent wellhead petroleum, we did not do much more than chuck a few crumbs from our groaning tables—perhaps 0.5 of 1 percent of the GNP—directly to the needs of developing peoples. For them and, in some measure even for our own poorer citizens, we relied on "trickle down"—the sheer scale of our growing prosperity spilling over to provide some benefits below. The method did not work for the 40 percent of the world who are most destitute even at the height of affluence.

And now, for the time being, energy constraints, the \$30 billion Europe must find before 1975 for imported oil, the general rate of inflation fed by the expectation of more rewards for everyone—all these cut deeply into our readiness even to let the crumbs fall.

In cities like Bombay, where three-quarters of the inhabitants live more than five to a room without piped water or drainage, it is hardly enough to hope that energy constraints may encourage alternative growth poles and rural decentralization. Where does the capital come from for such schemes? And, meanwhile, where are the resources to cope with present urban evils, let alone the urban evils of 1984 with double the people and very little more wealth? To allow this degree of despair to be combined with the rising tides of anarchy in our world is surely to guarantee the future to the man with the stocking face.

Some optimists argue that the increased price of energy will itself induce new conserving patterns in better communities. But for the poorest, higher costs make the dilemmas worse. There is, in truth, no alternative to the kind of purposive sharing of wealth which has long been practised—through welfare and public housing—in the market economies. This is clearly the highest priority in planned societies such as China. But we did little enough when the “energy jag” was driving our wealth upwards. Will we do more now that the constraints begin to hurt?

But let me end by giving you my arguments for a moderate hope. The first is rooted in reason. I believe that behind the confusions of these years, there *is* a desire on the part of many people not to have to feel that “things are in the saddle and ride mankind.” No one denies that many of our past policies and technological options were not made with a full understanding of their consequences. The piling up of evidence on pollution, waste, misuse, and rising costs, signals to us that we have been

on a wrong route—a route that could lead us hell-bent on a collision course with our planet, exhausting it, abusing its natural systems, and, finally, even putting an end to both it and us.

But reason does not want to hear that we cannot learn from our mistakes. This year's warning signals remind us that energy upon which most other resources depend is not unlimited and that continued careless use of our global patrimony could bring us towards an untenable community in an unworkable world. Does all this not urge us as rational human beings to take the needed steps towards the patterns of conservation, of careful use, of generous sharing, which we need in any case if we, the affluent and fortunate, are to live on this planet with another 2 to 3 billion people?

Nor is it simply a rational question. The warnings have within them the word of prophesy. Generosity, restraint, care, sacrifice—such qualities could be the basis of a way of life more human, more profoundly satisfactory, and more stable and lasting than the frantic adventures into which our energy jag took us without our really noticing where we were going. After all, in every human community—whether Moslem, Buddhist, Christian, or even Maoist—the innate moral sense of the human conscience has always suspected that indulgence and luxury would not take man very far, except over the edge of the cliff. In all the ethical traditions of mankind, restraint, good use, neighborliness, and a certain ability to see other people's needs are not extras. They are at the very core of a sane way of human existence. Now, it was very understandable that with 15-cent petroleum at the wellhead, we went on a jag. If you like, we have lived through a collective binge of unparalleled proportions. But the binge is now beginning to produce its own baleful consequences. Rapacity repays us with violence, overindulgence with scarcity, selfishness with hate.

To realize all this could mean that the drive for conservation and a more mature use of all our resources would not register a defeat, but a great victory. No longer blinded by the false hopes of endless expansion, driven back upon fundamental problems of living and sharing together in a beautiful but finite planet, no longer arrogant over our powers or blind to the needs of others, we could leave our "jag" behind and accept both a more rational and a more moral vision of the good life for man.





**Barbara Ward (Lady Jackson)**, the 1974 B. Y. Morrison Memorial Lecturer, is known as one of the most brilliant writers and lecturers on world affairs in the widest economic and political context.

Recently named President of the International Institute for Environmental Affairs, London, Miss Ward was Albert Schweitzer Professor of International Economic Development at Columbia University, New York, from 1968 to 1973. In 1972 she was a key advisor to the Secretary-General of the United Nations Conference on the Human Environment in Stockholm and was coauthor with Rene Dubos (5th Morrison Lecturer) of *Only One Earth, the Care and Maintenance of a Small Planet*, a report that set the conceptual framework for that conference.

Miss Ward, who received her early education in England, France, and later Germany, returned to England to attend Somerville College, Oxford, where she graduated with highest honors. She began to acquire a background in international development early in life, and when only 25, became assistant editor of *The Economist*, one of the leading British weeklies. She lectured for the Oxford University Extension Board and the Workers Educational Association, and published a book on the colonial question, *The International Share-Out*. During the war, she became a popular broadcaster, and was for 4 years a governor of the British Broadcasting Corporation. After the war, she traveled throughout Europe for *The Economist*, covering important events of the time.

Miss Ward has received many honorary doctorates in the United States, where she has lectured widely, and was the first foreign woman to receive an honorary degree from Harvard. A contributing editor of *The Economist* since 1950, she is the author of a number of books, including *A Policy for the West*, *Five Ideas that Changed the World*, *Spaceship Earth*, and *The Widening Gap*.

## *Previous Lecturers and Cosponsoring Organizations*

- 1968 Mrs. Lyndon B. Johnson; American Institute of Architects, Portland, Oregon, June 26.
- 1969 Prof. Patrick Horsbrugh, creator of the Graduate Program in Environic Studies, Notre Dame University; General Federation of Women's Clubs, Cleveland, Ohio, June 3.
- 1970 Dr. Arie J. Haagen-Smit, Chairman, President's Task Force on Air Pollution; American Society of Landscape Architects, Williamsburg, Virginia, April 28.
- 1971 Mr. Ian L. McHarg, Chairman of the Graduate Department of Landscape Architecture and Regional Planning at the University of Pennsylvania; The Thirty-sixth North American Wildlife and Natural Resources Conference, Portland, Oregon, March 10.
- 1972 Dr. Rene Dubos, Professor Emeritus of The Rockefeller University; American Association for the Advancement of Science, Washington, D.C., December 29.
- 1973 Dr. John P. Mahlstede, Professor of Horticulture, Iowa State University; 28th Congress of The American Horticultural Society, New Orleans, Louisiana, October 6.

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